

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) A chemical compound or composition comprising a peptide, said which peptide comprising comprises a β -strand-forming section of peptide which forms a β -strand having two edges, wherein:

- (a) said β -strand-forming section of peptide comprises a peptide backbone and forms a β -strand having two edges , a first edge and a second edge, corresponding to opposite sides of said peptide backbone;
- (b) said a-first edge which associates with a target β -strand formed by a separate peptide-containing molecule; , and a second edge, wherein
- (c) said the β -strand-forming section of peptide comprises a sequence of at least four consecutive α -L-amino acid α -L-amino acid-residues, all of which sterically permit the β -strand-forming section of peptide to form a β -strand, have side chains able to form favorable strong non-covalent interactions with neighboring neighbouring side chains of the target β -strand, and at least one of which is an $N\alpha$ -substituted with an $N\alpha$ -substituent α -L-amino acid-residue, and
- (d) any two successive $N\alpha$ -substituted α -L-amino acid α -L-amino acid-residues are separated by an odd number of consecutive $N\alpha$ -unsubstituted α -L-amino acid α -L-amino acid-residues, such that the $N\alpha$ -substituent(s) lie along only the said second edge.

2. (currently amended) The A-chemical compound or composition according to claim 1, wherein no two successive $N\alpha$ -substituted amino acid amino acid-residues in the β -strand-forming section of peptide

are separated by more than 3 consecutive $N\alpha$ -unsubstituted amino acid
~~amino acid~~ residues.

3. (currently amended) The ~~A~~-chemical compound or composition according to claim 1 wherein successive $N\alpha$ -substituted α -L-amino acid
 ~~α -L-amino acid~~ residues in the β -strand-forming section of peptide are separated from each other by single $N\alpha$ -unsubstituted α -L-amino acid ~~α -L-amino acid~~ residues, such that the β -strand-forming section of peptide comprises an alternating sequence of $N\alpha$ -substituted and $N\alpha$ -unsubstituted α -L-amino-acid residues.

4. (currently amended) The ~~A~~-chemical compound or composition according to claim 1 wherein the $N\alpha$ -substituent of each $N\alpha$ -substituted α -L-amino acid ~~α -L-amino acid~~ residue in the β -strand-forming section of peptide sterically allows or promotes the β -strand-forming section of peptide to form a β -strand, and sterically hinders the association of ~~the~~ said second edge of that β -strand with any other ~~another~~ β -strand.

5. (currently amended) The ~~A~~-chemical compound or composition according to claim 4, wherein the $N\alpha$ -substituent of each $N\alpha$ -substituted α -L-amino acid ~~α -L-amino acid~~ residue in the β -strand-forming section of peptide sterically hinders the action of proteolytic enzymes on the β -strand-forming section of peptide.

6. (currently amended) The ~~A~~-chemical compound or composition according to claim 4, wherein the $N\alpha$ -substituent of each $N\alpha$ -substituted α -L-amino acid ~~α -L-amino acid~~ residue in the β -strand-forming section of peptide is selected from the group consisting of:

a fluorine atom or an OH group;

a group that is connected to the $N\alpha$ atom by an oxygen atom within said group ~~it~~;

a group that is connected to the $N\alpha$ atom by a CH_2 subgroup within said group ~~it~~;

a methyl or ethyl group, or some other alkyl or aliphatic group;

a substituted or unsubstituted benzyl group, or some other arylmethyl group;

an acetylated or acylated 2-hydroxy-4-methoxybenzyl (AcHmb) group; and

an acylated or unacylated 2-hydroxybenzyl (AcHb/Hb) group.

7. (currently amended) The A-chemical compound or composition according to claim 1, wherein the side chain of each α -L-amino acid ~~α -L-amino-acid~~ residue in the β -strand-forming section of peptide allows or promotes the β -strand forming section of peptide to form a β -strand.

8. (currently amended) The A-chemical compound or composition according to claim 7, wherein the side chain of one or more α -L-amino acid ~~α -L-amino-acid~~ residues in the β -strand forming section of peptide is that of an amino-acid residue having a β -sheet propensity of greater than 1.00.

9. (currently amended) The A-chemical compound or composition according to claim 7, wherein the side chain of one or more α -L-amino acid ~~α -L-amino-acid~~ residues in the β -strand forming section of peptide is selected from the group consisting of:

an atom or group that allows or promotes the β -strand-forming section of peptide to associate as a β -strand with the target β -strand and thereby form a stable β -sheet complex; and

an atom or group that forms a hydrophobic or electrostatic interaction, hydrogen bond, or other favorable ~~favourable~~ non-covalent interaction with the neighboring ~~neighbouring~~ side chain of the target β -strand in a β -sheet complex comprising the target β -strand and the β -strand forming section of peptide.

10. (currently amended) The A-chemical compound or composition according to claim 7, wherein the side chain of one or more α -L-amino acid ~~α -L-amino-acid~~ residues in the β -strand forming section of peptide is selected from the group consisting of:

a hydrophobic group, or a group that has a considerable hydrophobic portion;

a branched or unbranched alkyl or aliphatic group;
a group that is branched at its connecting β -carbon atom;
an aromatic group;
an acidic or basic group; and
an amide- or hydroxyl-containing group.

11. (currently amended) The A-chemical compound or composition according to claim 1, wherein the side chain of one or more α -L-amino acid ~~α -L-amino acid~~-residues in the β -strand-forming section of peptide hinders the stacking of β -sheets.

12. (currently amended) The A-chemical compound or composition according to claim 11, wherein the side chain of one or more α -L-amino acid ~~α -L-amino acid~~-residues in the β -strand-forming section of peptide extends beyond the neighboring ~~neighbouring~~-side chains in the β -strand.

13. (currently amended) The A-chemical compound or composition according to claim 1, wherein the side chain of one or more α -L-amino acid ~~α -L-amino acid~~-residues in the β -strand-forming section of peptide allows the compound or composition to be traced or detected.

14. (currently amended) The A-chemical compound or composition according to claim 13, wherein the side chain of one or more α -L-amino acid ~~α -L-amino acid~~-residues in the β -strand-forming section of peptide is selected from the group consisting of:

an atom or group that contains a radioactive or magnetically active nucleus;

that of phenylalanine or tyrosine with one or more radioactive or magnetically active iodine or other halogen atoms substituted onto the aromatic ring;

a fluorescent, colored ~~coloured~~, or other spectroscopically detectable group;

a group which contains an unpaired electron and thereby acts as a spin label;

a group which contains the 2,2,5,5-tetramethyl-1-pyrrolidinyloxy (PROXYL) group; and

a group which contains the 2,2,6,6-tetramethyl-1-piperidinyloxy (TEMPO) group.

15. (currently amended) The A-chemical compound or composition according to claim 1, wherein the side chain of one or more α -L-amino acid ~~α -L-amino acid~~ residues in the β -strand-forming section of peptide is selected from the group consisting of the side chain of:

any naturally occurring α -L-amino acid ~~α -L-amino acid~~ or synthetic derivative thereof; ~~glycine~~; alanine; serine; cysteine; threonine; valine; leucine; isoleucine; methionine; phenylalanine; tyrosine; tryptophan; glutamine; asparagine; glutamate; aspartate; histidine; lysine; arginine; and *tert*-leucine or β -hydroxyvaline.

16. (currently amended) The A-chemical compound or composition according to claim 1 wherein the target β -strand is formed by the Alzheimer's A β peptide, and the β -strand-forming section of peptide binds specifically as a β -strand to part or all of the KLVFFAE sequence (SEQ ID NO:3) within the target β -strand in the parallel orientation, thereby forming a parallel β -sheet complex wherein consecutive residues of the β -strand-forming section of peptide lie directly opposite consecutive residues of the KLVFFAE sequence in the same order.

17. (currently amended) The A-chemical compound or composition according to claim 1 wherein the target β -strand is formed by the Alzheimer's A β peptide, and the β -strand-forming section of peptide binds specifically as a β -strand to part or all of the KLVFFAE sequence (SEQ ID NO:3) within the target β -strand in the antiparallel orientation, thereby forming an antiparallel β -sheet complex wherein consecutive residues of the β -strand-forming section of peptide lie directly opposite consecutive residues of the KLVFFAE sequence in reverse order.

18. (currently amended) The A-chemical compound or composition as claimed in claim 17 wherein the β -strand-forming section of peptide comprises at least a four-residue segment of the amino acid ~~amino acid~~ sequence aa1-aa2-aa3-aa4-aa5-aa6-aa7, or a mimic thereof, where:

aa1 is α -L-lysine or α -L-arginine;

aa2 is α -L-leucine or α -L-lysine, or an N α -substituted form thereof;

aa3 is α -L-valine or α -L-isoleucine;

aa4 is α -L-phenylalanine or α -L-tyrosine, or an N α -substituted form thereof;

aa5 is α -L-phenylalanine or α -L-tyrosine;

aa6 is α -L-alanine, α -L-threonine, α -L-valine, α -L-isoleucine, α -L-leucine, α -L-methionine, α -L-lysine, or α -L-histidine, or an N α -substituted form thereof;

aa7 is α -L-tryptophan or α -L-glutamate.

19. (currently amended) The A-chemical compound or composition according to claim 1 wherein the β -strand-forming section of peptide is preceded by, followed by, or otherwise attached to a distinct membrane-penetrating section of peptide which enables the β -strand-forming section of peptide to cross ~~biological barriers such as cell membranes,~~ and the blood-brain barrier or any other biological barrier.

20. (currently amended) The A-chemical compound or composition according to claim 19 wherein the side chain of each residue in the membrane-penetrating section of peptide is selected from the group consisting of:

a basic or hydrophobic group; and a side chain of alanine, valine, leucine, isoleucine, methionine, phenylalanine, tyrosine, tryptophan, proline, histidine, lysine, and ~~or~~ arginine.

21. (currently amended) The A-chemical compound or composition as claimed in claim 19 wherein the membrane-penetrating section of peptide is made resistant to enzyme-catalysed proteolysis by the

incorporation of α -D-amino acid ~~inclusion of α -D-amino acid-residues~~
and/or N α -substituted amino acid ~~amino acid-residues~~.

22. (currently amended) The A-chemical compound or composition according to claim 1 wherein the β -strand-forming section of peptide has a free or acylated N terminus and a free, amidated, or esterified C terminus, or forms part of a larger peptide which has a free or acylated N terminus and a free, amidated, or esterified C terminus.

23. (currently amended) The A-chemical compound or composition according to claim 1 wherein the β -strand-forming section of peptide is attached to another functional component.

24. (currently amended) The A-chemical compound or composition according to claim 23, wherein the functional component is selected from the group consisting of:

a component which strengthens the binding of the β -strand-forming section of peptide to the target β -strand;

a component which enhances specificity of association of the β -strand-forming section of peptide with the target β -strand;

a component which enables the β -strand-forming section of peptide to cross ~~biological barriers such as cell membranes, and the blood-brain barrier~~ or any other biological barrier;

a component which causes the compound/composition to target specific organs, cells, or molecules;

a component which allows the compound/composition to be traced or detected;

an atom or group that contains a radioactive or magnetically active nucleus;

a fluorescent, colored ~~coloured~~, or other spectroscopically detectable group;

a group which contains an unpaired electron and thereby acts as a spin label;

a group which contains the 2,2,5,5-tetramethyl-1-pyrrolidinyloxy (PROXYL) group or the 2,2,6,6-tetramethyl-1-piperidinyloxy (TEMPO) group;

a solid matrix, resin, or support;

an enzyme, hormone, antibody, transcription factor, or other protein molecule;

a group that binds specifically to a particular protein; and

a cytotoxic molecule.

25. (currently amended) The chemical compound or composition according to claim 23, wherein attachment of the β -strand-forming section of peptide to the functional component is by means of: an amide or ester linkage formed with the ~~C-terminal carboxyl group~~ C-terminus of the β -strand-forming section of peptide; or ~~N-terminal amino group of the full peptide,~~ an amide linkage formed with the N-terminus of the β -strand-forming section of peptide; or an amide linkage formed with a carboxyl or , amino, or hydroxyl group of a side chain within the β -strand-forming section of the full peptide; , or an ester linkage formed with a carboxyl or hydroxyl group of a side chain within the β -strand-forming section of peptide; or ~~by means of a~~ disulphide bridge formed with a thiol group of a side chain within the β -strand-forming section of the full peptide.

26. (currently amended) The A-chemical compound or composition according to claim 1 wherein the β -strand-forming section of peptide associates with a target β -strand comprising the amino-acid sequence KLVFF (SEQ ID NO:1) ~~(SEQ. ID. NO. 1)~~.

27. (currently amended) The A-chemical compound or composition according to claim 1 comprising one or more components which mimic the structure and action of said β -strand-forming section of peptide, wherein the components are formed by replacing one or more of the backbone peptide groups or side-chain groups of the β -strand-forming section of peptide by another chemical group of similar

stereochemistry and ability to form favorable ~~favourable~~ non-covalent interactions with the target β -strand.

28. (currently amended) The A-chemical compound or composition according to claim 27 ~~25~~ wherein:

(a) one or more of the N-unsubstituted backbone peptide groups (CONH) of the β -strand-forming section of peptide is/are each replaced by any one of the following groups: CSNH (thioamide); COO (ester); CSO or ~~7~~-COS (thioester); ~~7~~ CSS (dithioester) ~~(thioester)~~; COCH₂ (ketone); CSCH₂ (thioketone); SO₂NH (sulphonamide); SOCH₂ (sulphoxide); SO₂CH₂ (sulphone); SO₂O (sulphonate); and/or ~~wherein~~

(b) one or more N-substituted backbone peptide groups (CON(R)) of the β -strand-forming section of peptide is/are replaced by one of the following ~~an~~ N- or C-substituted ~~form of one of the following~~ groups: ~~CSNH~~ CSN(R) (thioamide); COCH(R) ~~COCH₂~~ (ketone); CSCH(R) ~~CSCH₂~~ (thioketone); SO₂N(R) ~~SO₂NH~~ (sulphonamide); SOCH(R) ~~SOCH₂~~ (sulphoxide); SO₂CH(R) ~~SO₂CH₂~~ (sulphone), wherein R is equivalent to the original N α substituent; and/or ~~wherein~~

(c) one or more of the side chains of the β -strand-forming section of peptide is/are each replaced by another group having similar stereochemistry or arrangement of polar and non-polar atoms, maintaining those particular features which are essential for association with the target β -strand.

29 - 42 (cancelled)

43. (previously presented) A pharmaceutical compound or composition according to claim 1.

44 - 45 (cancelled)